

This Old House

Renovation

IN SAVANNAH



PLUS:

**Air Conditioning
Gutters
Cordless Drills
Workbenches
Plasterwork**



Norm Abram with Millis and Marianne Fleming inside their new house, site of this season's TV show.

USA \$3.50 CANADA \$4.50



Walk around to the driver's side of the Plymouth Grand Voyager and you'll find an industry exclusive: an available second sliding door. Now, getting in and out of our



minivan is easier than ever. (So is loading and unloading cargo.) And just wait 'til you see what's behind door number two. * Rear bench seats that

**Where do you find
the newest thing
in a minivan?
Second door
on the right.**



Plymouth Grand Voyager

glide on wheels, making them a cinch to move and roll away. We call them Easy Out Roller Seats,** and they're another industry exclusive. And depending on which seating package you choose, both bench seats now fold flat,** allowing you to carry a



www.plymouthcars.com



4' x 8' sheet of plywood with the seats in and the liftgate closed. * Front cup holders

adjust to accommodate anything from a four-ounce baby bottle to a full one-liter jug—another...well, you get the picture. Simply put, the new Grand Voyager is the next generation of the minivan. * All of which says nothing of Grand Voyager's long list of safety features. Like dual air bags,* four-wheel anti-lock brakes,** and available dual integrated child safety seats. The all-new Plymouth Grand Voyager. Maybe the



question really isn't what's new—but what isn't? * For more information, see your local Chrysler and Plymouth dealer,  call 1-800-PLYMOUTH, or visit Plymouth Place™ on the Internet's World Wide Web at <http://www.plymouthcars.com>.

One clever idea after another.



That's Plymouth.



HOW
MARIO ANDRETTI
LOOKS AT THE
WORLD

This first time he got behind the wheel of a race car, he was "Red" Marvin. Andretti never shared drives. He won the Daytona 500 in 1967. The Indianapolis 500 in 1967. The Formula One World Championship in 1978. In his 30-year career, he has driven nearly

every race car there is to drive and won nearly every title there is to win. So when he began looking at windows for the new house he was building in Natickville, Pennsylvania, second best was not an option. He went with the company that is just as versatile,

just as driven to perfection as the ex-Marvin Andretti above Marvin. If you want like windows and drives in your house to reflect your unique sense of style and taste, call 1-800-348-5215 (1-800-348-6761 in Canada) or mail the coupon for a free brochure

Daughter and son-in-law, Marvin Andretti & Son, Inc., 977-0001

Name _____

Address _____

City _____

State _____

Zip _____

Country _____

MARVIN
WINDOWS & DOORS

Made to order. Made for you.

contributors



PAUL EGGENHORN (author, "Japanese Bow") is a former editor and reporter for the San Jose Mercury News who now freelances out of San Francisco and edits a monthly newsletter about medical uses of the Internet. He spends his spare time renovating the 1946 Midway-style home where he lives with his wife and two growing children.

■ **EMERSON WATSON** (photographer, "Ornamental Plastic") only
knew how to pretend: he was out of New York City. His photographs
have appeared in *Seven's* Leisure, *Orange* and *Metropolitan Home*.

■ **NATHANIEL REARD** (author, "Building a Different Boat")



Manthly: His home renovation experience includes a successful rehabilitation project on a dilapidated Victorian in Providence Rhode Island, which he successfully turned into West Photo, North

JEFF VON NOENE photographer, "Low County Air Conditioning" shows a loft studio in downtown Atlanta

with his wife, Liz. Their latest renovation project included retooling the roof and gutting the bedroom of the 1919 brick bungalow where they live with their two children. **SPENCER JONES** (photographer)



"Cardiac Drive and Drive") is a native of Greensboro, North Carolina, who has been transplanted to New York City, where he is currently pulling the dual

author "Moving Forward, Forward!"

“Chester White” taught a controversy.

challenged Vitorito immediately in May, Pennsylvania. He started and began a program of "damage-to-yourself" projects. To date there have been no serious injuries. He is shown here with doubles coach Robert Turfway.



THE ONE House

[illegible][illegible]

Erin C. Throckmole
 Assistant
 Vice-Chair
 Executive Committee
 University of Maryland
 College Park, Maryland
 erin.throckmole@um.edu

Address: 10000 N. 10th Ave., Suite 100, Denver, CO 80231
Phone: (303) 755-1100
Fax: (303) 755-1101
E-mail: info@denverchamber.com
Website: www.denverchamber.com

Submitted: 10 May 2006; Accepted: 10 June 2006
 Copyright © 2006 John Wiley & Sons, Ltd.
<http://www.interscience.wiley.com>

David M. Levine
David M. Levine

The *Journal of Law, Economics, & Organization*, Volume 24, Number 1, March 2008, is available online at <http://www.oxfordjournals.org/doi/10.1093/jleo/lfn001>. The *Journal of Law, Economics, & Organization* is a peer-reviewed journal published by the American Law and Economics Association. The *Journal of Law, Economics, & Organization* is a peer-reviewed journal published by the American Law and Economics Association. The *Journal of Law, Economics, & Organization* is a peer-reviewed journal published by the American Law and Economics Association.



"I HAVE TWO LOVES IN MY LIFE....
I MARRIED ONE
AND I MOW WITH THE OTHER."



Most people have strong feelings when it comes to their John Deere lawn tractor.

Maybe it's because over 90 percent of John Deere owners are satisfied with their tractors. Which makes John Deere born tractors number one in owner satisfaction, when compared to other brands.

Or maybe it's a combination of features that make these owners so happy. Features like hydrostatic Trela "Boach" two-pedal foot control. Powerful overhead valve engines with cast-iron cylinder liners and

Of the extra-light 30-inch turning radius, to name a few. Then again, there's also the

fact that John Deere lawn tractors have the highest resale value of any lawn tractors on the market." (Of course, getting John Deere owners to part with their lawn tractors is another story.)

But of all the things that make John Deere owners the most satisfied, one thing's for sure. While most people have only one love in their life, John Deere owners are lucky. They can count as two.

NOTHING RUNS LIKE A DEERH®



Need further assistance? Visit www.fishbase.org or write "I need to learn more about" followed by the species name to help@fishbase.org



ONE THOUSAND TWO-BY-FOURS. TWENTY-SIX DECKS.
THREE OAK FLOORS. AND IT'S STILL SUITABLE FOR FRAMING.

YOU WANT TOASAP FRAME THIS: RUGGED ALUMINUM HOUSING. SPINOUT LOOKS FOR EASY

BLACK CHAIRS. BALL AND ROLLER BEARINGS. 34-TOOTH CHAIRS. BLACK. AND A POWERFUL

275 HP, 10 AMP MOTOR. THE CRAFTSMAN SAWMILL. ANYTHING LESS, JUST BORST IT OUT IT

CRAFTSMAN

EXCLUSIVELY AT DEWALT AND DEWALT HARDWARE STORES



©2001 Penton and/or 1999

contents

MARCH/APRIL 1999

Pullout plans for the **Savannah** project 64

Clay and fire: how **brick** is made 66

Trellis and **vine** for a vertical garden 74

Low country **air conditioning** 80

Building a driftwood **boathouse** 84

Ornamental **plasterwork** 92

How **gutters** can save your house 100

What have they done at **Levittown**? 106



Plaster work, p. 92



Plastered gutters, p. 100



Billy Green's house, p. 106

THE OLD HOUSE
2001

Get weekly updates
on the Savannah
project as well as
updated appearance
schedules for the crew.

The Old House can
be reached through
Pentagon on the
West Coast Web.
<http://www.pentagon.com/TOH/>

Cover photograph by
Theresa Johnson



contents

T a b l e

Cordless drills and drivers **29**

New initiatives have enough power for professionals

Fitting

Shower update **35**

Low-flow, extracold and other new-fangled devices

(T o o l s)

Japanese saws **39**

Yes, they really are better than ours.

Mathematical Induction

Sandpaper options **45**

What's the best abatement for the mold?

E g g / p r e n

Workbenches 49

Norm Adams can give you the can't do without

Technique

Sharpening 55

Reprints from specialist Jerry Calmore

Р і з н и ц я

Buying foreclosed homes **58**

The house of your dreams for a price of a price.

Miscellaneous

Contributors 4

Readers' Letters 19

Television Listings 13

Extras 20

A Letter From This Old House 61

Directory 112

Sewn This Old House 132



Rechnung ist nicht durchgeführt. **0** **10**



²Wolfgang Iser, *Im Akt des Lesens*, 79–80.



Copyright © 2009 John Wiley & Sons, Ltd.



Carum albidum nobis, p. 48.

Construction can be dangerous. Think about your safety, and that of others, when you embark on the projects shown in this magazine.

The new
Saab 900
Turbo.
Finally, a
5-door you



THESE ARE THE RESULTS:

Find your own road.

It's not just the 200 Turbo, it's the 1000-hp, 1000-torque, 1000-mile-per-hour difference between you and your car. Including the Volvo 850GLT and 460GLT, the 2 to 80 in under 7 seconds, 0 to 100 in 1.9 seconds, 440 b.h.p. and spacious interior are pure Swedish. So no matter how you drive, you'll love it. Call 1-800-222-2222. It's a Consumer Review. The 18 Sports Car.



For a free Study Resource Kit, which provides information on the entire Exam, see: call 1 800-363-6444, Ext. 333- www.wiley.com

Television Listings

WHAT AND WHEN IS ON THE TUBE

ALABAMA

Birmingham
WABZ-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Montgomery
WISQ-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Mobile
WMOB-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Dauphin
WISQ-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Opelika
WISQ-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

ARIZONA

Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Tucson
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Flagstaff
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

CALIFORNIA

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

CONNECTICUT

Hartford
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Stamford
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

FLORIDA

Tallahassee
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Orlando
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Miami
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

GEORGIA

Atlanta
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Savannah
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

ILLINOIS

Chicago
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
Springfield
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

INDIANA

Indianapolis
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

KANSAS

Topeka
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

KENTUCKY

Louisville
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

LOUISIANA

New Orleans
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

MAINE

Bangor
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

MARYLAND

Baltimore
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

MASSACHUSETTS

Boston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm



San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

San Francisco
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Jose
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Diego
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Antonio
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Austin
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Houston
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Dallas
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Phoenix
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Portland
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Seattle
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Tampa
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Washington
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San New York
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm
San Los Angeles
KATV-TV
 Thu. 8:30 pm
 Sat. 5:00 pm

You have a cabinetry
Choice
 Make the right one



KraftMaid

Impressive, lasting, unsurpassing quality and unique character. The kitchen that you desire in your home are the same qualities that make KraftMaid your "cabinet" choice.

Realistic about your kitchen style and needs, KraftMaid offers a wide range of cabinet styles, from traditional to contemporary. Custom craftsmanship, including hand-stained woodwork, extended lengths and drawer suspension systems, provides long-lasting durability. Competitive pricing, excellent customer service and more than 80 years of cabinet experience. KraftMaid offers unrivaled versatility. KraftMaid's cabinetry is the finest cabinet made for every room in your home.

How can we help you? Please enter your kitchen style and cabinet choice.

Name

Address

City

State

Zip

Phone

Model

PortMaid Cabinetry Inc.
 1000 Industrial Pkwy. P.O. Box 1000
 Houston, TX 77001

See KraftMaid every weekend on the radio. Great listening station. Check your local listing for station, time and code.

Or call 1-800-591-4484. 24 hours a day, 7 days a week. Or on the Internet: <http://www.kraftmaid.com>

what you want to see This Old House

n
 s
 d
 ca
 de
 di
 of
 in

Journal of Interpersonal Violence 26(10)



© 2004 The Authors
Journal compilation © 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 101–108

If you have
never used

This Old House
20 West 43rd Street
New York, NY 10018

or in your
favorite kitchen store

extras

a better wrench

In his shop and on house calls, plumber Richard Trifunovic has been evaluating wrenches, "always looking for the perfect tool," he says. One of the four shown here seems surprisingly close. The Robo-Grip "seemed kind of gimmy-like at first, but it's easy to use. It self-adjusts as you squeeze the handles, which is great, and the handles are well-shaped." Of riveted, lasermarked construction, life also light, and the knifed jaws have no holes or gaps and ruts. It's available in 6-inch and 8-inch models, with curved or straight jaws. Trifunovic's sole complaint: "The spring-loaded handles tend to stay open in the toolbox, so it's a little clumsy to get out. Still, I'm surprised at how much I use it and like it." He was less enthusiastic about two Knipex imports. Model KNE602 (120 inches) works well, "but it's heavy and expensive. It doesn't self-adjust, and the handles weren't designed to pinch your palm between them. The smooth, parallel jaws are good on nuts but not on pipes." The lighter model KNE711-12 (10 inches) is "a lot better," he says. "The handles are springy and comfortable, and the jaws give you two fulcrums, one for pipe and another for nuts." As for Sunco's EZ-Grip, an 8-inch adjustable wrench with a handy thumb-slide mechanism, Richard says it's not heavy-duty enough for hard use, but it's a good everyday tool for quick fixes. It's perfect to keep in the trunk of the car, just in case you're covered.

Robo-Grip
ROG curved jaw
\$30



Knipex KNE602 \$75.00



Knipex KNE711-12 \$35.00



Sunco EZ-Grip \$16

CFC black market

Enterprising smugglers are turning from guns and drugs to chlorofluorocarbons, or CFCs. The ozone-depleting refrigerant gas, used in some residential and automotive air conditioners, hit the black market several years ago but became a hot item this year when production and new imports were banned in the United States. Smugglers buy the coolant overseas and sneak it into the country mixed with legal cargo or in fraudulently labeled cylinders. It's then sold to heating and cooling contractors, auto repair shops and industrial users. Street value: about \$20,000 per ton. According to federal officials, more than 1 million tons of contraband CFC have been confiscated and dozens of people arrested within the last year.

Photographs by Darrin Maddad

events of interest

■ **FOR A LUGGAGE FULL OF OLD CRAFTSMAN HERBS OF OLD SARASOTA** plan to attend the 61st Annual Sarasota Tour of Homes and Gardens, March 26-31. Festivities include walking tours, a party lunch and Sunday dinner at Mrs. Wilkes' Dining House, a local must-visit. For information, call 813-234-0554.

■ **RESTORATION** is the largest preservation conference in North America; will be held March 17-19 at the Baltimore Convention Center. The show features 300 exhibitors of products and services and 35 educational conferences on the theme "Moving Into the Movement: Making Restoration Accessible to All." Call 586-664-8050 to register.

■ **SPEND THE NIGHT IN AN HOLE** you build yourself at the University of Calgary's weekend course in Igloo and snow shelter construction. The course starts with a lecture on March 18, followed by a hands-on building session March 23-24. Call 403-255-5028 for registration information.

■ **THE WORKER ESTEEM** IN CHARLOTTEVILLE, VIRGINIA, will be holding a two-day symposium on "The Grand Estate: Yesterday, Today and Tomorrow." Attend lectures and tour the \$300,000 private estate's gardens, grounds and art collections. April 17-18; for information call 800-853-5613.

BUDDING BUILDERS



A group of 20 fifth graders, wearing hard hats, goggles and tool aprons sat on the floor in the massive Great Hall of the National Building Museum in Washington D.C., ready to get a hands-on lesson in building. Through a program called "I'll Meet a Hammer," the kids were about to become part of a construction crew that would build an 8-by-11-foot house, complete with three working windows, a door and a front porch. Using 30 pre-cut, color-coded pieces, hammer and cordless drill, they got the job done in two hours—and that included one "softer" break. The children did the foundation, attached the wall frames and the eaves, raised the roof trusses and finally hoisted the 8-foot to complete the structure. When it was done, the leader gathered the kids for a group cheer. Then they got to go inside the house and admire their handiwork. "Honey, I did this," yelled one satisfied builder as he crossed the threshold.

Illustration courtesy of The WBNS-TV

(See Directory, page 116, for details and sources)

(See Directory, page 118, for details and sources)



and the following:


And this year money features that were options are standard. So now the price of a well-equipped Inexpensive may be lower than you'd expect... while resale value is higher than Durant, Lanza, Camry and every car in its class!

Except for the windshield,
the wheels and the price,
things are pretty much where
you'd expect them to be.

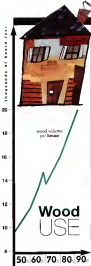
\$18,995,
well-equipped

- Standard 3 FL, sequential EPT V8 engine, 90 hp
- Standard speed control
- Standard power windows and door locks
- Standard H¹ seating three
- Standard flip lumps
- Standard power forward outside mirrors
 - Standard airbags for driver, front passenger
 - Standard air conditioning
 - Standard ABSW (convertor and remote window controls)
- After marketer room and lavatory options (Tourist, Canada or Italy)
- Buyer made rules record than Hawaii, Louisiana or Canary
- Customer One Case™ 3-year or 60,000 mile bumper-to-bumper warranty and 3-yr. Pontiac Assistance!
- For full sales information, call 1-800-4-A-PONTIAC



Intrepid  **The New Dodge**
A DIVISION OF THE CHRYSLER CORPORATION

© 2009 The Authors
Journal compilation © 2009 Blackwell Publishing Ltd



Despite all our talk about saving the forests, Americans are using more wood and wood products in homes than at any time since record-keeping began in 1950. The average new house of 1992 used more than twice as much lumber and wood products as did the average new house in midcentury. Much of this is because the average house today stands 1 1/2 stories taller. But total wood volume for each square foot of finished floor space is also an all-time high. Forest Service researchers say that's because of three multi-story houses, garages and foundations with steel squares instead of concrete slabs.

Just this thing for that looks good like too. The Top Tip is aluminum roof shingles that's lightweight and just about everything, including wet, keeps the roof from getting too heavy. You can't get the whole house with it. The 36 by 44-inch sheets are nailed in place much like ordinary metal shingles, although keeping valleys and corners special-looking takes skill. The long, sliding teeth tend to stick out at odd angles. You also have to cut the teeth at the edges being then around a dormer or pipe to keep the roof from looking like it's been over-stuffed. Triple Top suits for \$10 per square foot, undrilled. It comes with a large field set with pre-drilled. No slanted peak.



QuickChange Screwdriver Bits

The Snappy Quick Chuck deserves its name. Chuck it into your 1/2-inch drill and you can install or change bits in seconds. Just push in a screwdriver, drill or counter-bore bit, and it locks in place. To remove it, just slide back the locking collar. Problem: grooved bit-end tools are required. No problem. Snappy box adapters fit round bits from 1/4- to 3/4-inch. Vermont American's "Screw Boss" is a handy tool to use with (or without) the Snappy. Its magnetic holder accepts hex-shank screwdriving bits, and its sliding sleeve holds screws up to No. 10 diameter. The sleeve keeps screws from slipping or wandering as the drill turns. Makes for a handy identical accessory with a clear plastic sleeve so you can see when the screw is driven home.



(See Shopping, page 170, for details and prices.)

what will they think of next?

Triple Top
roof of shingles



Good Fences

Building a fence this spring? For inspiration, look through fences by Peter Joel Hansen. About 15 years ago, Hansen wanted a Colonial-style fence in Raleigh, North Carolina. Finding no real style design guide, he set out to write his own. The book is a page after page of photos, plans, prices and whole sentences of fencing, all drawn to scale from examples he saw during visits to historic sites in the East. Hansen has done similar books on gardens and brick pavements. He's currently at work on a collection of Cape Cod fence designs.



"We shape our buildings; thereafter, they shape us."

Winston Churchill



This Old House



Homemade Dreams

CHARTER
SUBSCRIPTION

☐ **Yes!** Send me 1 year (5 issues) of **THIS OLD HOUSE** at the Charter Subscription rate of just \$18.

Name _____

Address _____ Apt. # _____

City _____ State _____ Zip _____

THIS OLD HOUSE is published 5 times a year. Please a check or m/c \$18 per year. Please allow 4-6 weeks for delivery. Please allow 4-6 weeks for delivery of postage handling and GST. Please allow 4-6 weeks for delivery of postage handling and GST. Please allow 4-6 weeks for delivery of postage handling and GST.

This Old House

407

GIFT CERTIFICATE

☐ **Send a gift of THIS OLD HOUSE** for 1 year (5 issues) at the Charter Subscription rate of just \$18.

From _____

Name _____

Address _____ Apt. # _____

City _____ State _____ Zip _____

To _____

Name _____

Address _____ Apt. # _____

City _____ State _____ Zip _____

To _____

Name _____

Address _____ Apt. # _____

City _____ State _____ Zip _____

THIS OLD HOUSE is published 5 times a year. Please a check or m/c \$18 per year. Please allow 4-6 weeks for delivery. Please allow 4-6 weeks for delivery of postage handling and GST. Please allow 4-6 weeks for delivery of postage handling and GST.

This Old House

407

This Old House



BUSINESS REPLY MAIL

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

POSTAGE WILL BE PAID BY ADDRESSEE

This Old House
Subscription Department
PO BOX 3048
BOSTON, MA 02208-0304



Renovating



Designing



Building



**The stuff
dreams are
made of.**

©1998 by Time Warner Entertainment Company, L.P. All rights reserved.



To test this new, we used a Japanese
multi-tool. We used a
page from a design
book, showing it to
the side we wanted.
They we inspired to
the highest quality
image side down into
a piece of wood,
peeling away the
paper to reveal the
block parts of the
paper center.



Wood Carving



A reader then wrote to the Old World side of a woodworker, there is a relatively new way of tool
the new carving corner. Unlike other carving corners, which are made for general woodworking corners
and just for hand tools, after each new corner and design, the carving is made to match the shape of
traditional carving gauges, of flats and V parting tools. When we turned on the Automash HCT 200 and
the new, considerably cheaper version from Ryobi, we found the vibration might make our hands
numb after prolonged use, but traditional carving is even harder on the hands than power carving, we
concluded after an evening of doing both. When asked to buy? The 2000 Automash is a great tool, but its
wide blades remove more wood. More substantial than the 500 Ryobi, it would be the best choice for
professionals. Out the Ryobi out well, even in black walnut, and we find it smaller blades for detail work.

electric box

Consider this: Most people have a
renewed sense of which a better
owner currently market wallpaper
after he is installed wallpapering—
it is a new sense. Other way, all
electricians had to be born with
and power. Adjust-A-Box solves
the problem with an adjustment
spring that can move rollers up to
1/2 inches out from the wall,
enough to accommodate almost
any wall thickness. "They're the
expensive to put everywhere in the
house," Bob says. "But in kitchen
and bathroom, it's essential to
everything else. Every customer
should know about them—but
no homeowners, please."



is an "everybody wins" program called Jordan Commons. 900 Florida families
devastated by Hurricane Andrew are getting new homes. The American Iron and
Steel Institute is donating the steel framing materials and in the process promoting its
members' products. The National Association of Home Builders is using the materials in
week-long training sessions on building with steel, thus serving its
member members. The contractors who donate their labor learn new skills they can
use to turn up business. And after each session, Homeless Habitat for Humanity
gets a finished house for other volunteers to complete.

(See story on page 116 for details and sources)

I can't say enough about Ace Lawn & Garden Supplies...

The oscillating sprinkler. Don't know exactly what oscillating means, but it keeps the lawn watered and the kids cool.

The shovel "Borrowed" this from Dad when we planted the elm tree a couple years ago. Wonder if he's noticed its gone?



The hose waters the garden, fills the kiddie pool, and washes the car. What else can you ask?

My Lawn Mower "Old Red" brought this when we bought the house. Starts every time even when I wish it wouldn't.

Fertilizer. The secret to the best lawn on the block - keeps the grass, although that's probably spreading it on a little too thick.

Ace Brand lawn and garden supplies are made with a satisfaction guarantee. Because all the talk in the world doesn't matter if you can't back it up.

©1998 Ace Hardware Company

ACE
BRAND

Cordless Drills and Drivers

A new generation for the job site

BY MARK FEIRER PHOTOGRAPH BY KELLER AND KELLER

W

hen it comes to drilling holes or driving screws, you can't beat a cordless tool for convenience. "I don't even use a corded model anymore," says Tom Silva, *This Old House* contractor. "Unless I've got a pile of dry-wall to hang or a whole subfloor to screw off, it's faster to grab a cordless and go."

He's not alone. "Plumbers, electricians, the guys who do the ductwork—they've all gone cordless," Tom says. Carpenters don't lug extension cords up and down ladders, heating contractors don't fillet their power cords on the edges of metal ducts, and nobody has to worry as much about the shock hazards of working where it's wet.

A drill/driver is essentially a drill with added features (including a multi-setting clutch) to handle the heavier stresses of screwdriving. That makes it more versatile than an ordinary drill. The batteries and

battery charges of both tools, however, are a lot better than they once were. Most carpenters. Now, Silva's first cordless drill took about three hours to charge and wasn't much better than a Yasko screwdriver for driving screws. These days a drill/driver is ready to go in as little as 15 minutes, more than adequate to keep most people working steadily. Tom, however, packs



two batteries on the job. One slips in the charger and the other dies, and he swaps them back and forth all day in maximum downtime. At least, a busy contractor, he uses several drill/drivers with batteries that range up to 14.4 volts. Unless you're using it gradually, though, a 3.6-volt drill or drill/driver will be able to do most anything around your old house.

A cordless drill/driver is just right for installing some windows. The switch on top is for changing speed ranges.

The Details

Most cordless drills have a variable-speed trigger switch, slow-speed gear for starting holes, fast speeds for fast turns. Drill drivers have the same feature but with two separate ranges: a high-speed range for drilling screws when you start into something new, an adjustable clutch inside the tool allows you to set screws at a controlled depth. Most drill drivers have an adjustable brake too. When the trigger is completely released, the chuck stops instantly to keep you from overdriving a screw. Whether its features, a drill or drill driver should be comfortable to use—but that, too, is a personal thing. We'll find better you try it, because they vary considerably in weight and balance. The basic types are shown here. Light-duty drill drivers go for about \$50, intermediate-grade models are \$120 to \$200. Standard cordless drills are somewhat less expensive.

- 1 Beach placed-handle drill driver
- 2 Motorized pistol-grip drill driver with removable side handle
- 3 Milwaukee 35-degree-angle drill with two triggers
- 4 Makita Throttle drill driver
- 5 Hilti right-angle drill



BATTERY PACK

The Parts

PHOTOGRAPHS BY SPENCER JONES

CHUCKS



CHUCK CHOICES

A chuck with a key (shown left) is still common, particularly on heavy-duty drills and drill/drivers, but a keyless chuck (center) is more convenient. The keyless version of right is a quick-connect chuck. It accepts only drill bits and screwdriver tips that have a hex shaft.

Keyed chucks require more chucks, and it takes time if you can find it. "A chuck key is the first thing you lose on a job," says Tom, even if it's clipped to the drill itself. With a keyless chuck, there's nothing to lose: a pair of knobby rings around the outside of the chuck let you release or loosen it by hand. "Keyed chucks? I won't mess 'em a bit," Tom says.

The chuck of a drill or a drill driver is what holds the bit (or screwdriver tip) in place. It's rated according to the diameter of the largest bit shaft it can hold, from 1/8 inch up to 1/2 inch. The 1/2-inch chuck, however, is standard size on general-duty drills and drill drivers (Tom wouldn't use a smaller one anyway).

The main chuck decision these days is whether or not to go keyless. A single key with



The bulk of this quick-connect Penwin drill driver goes into tight spots (such as cabinet interiors) and locks into position.

BATTERIES AND CHARGERS

A battery charger generates heat, and understanding that heat tells the smart type of drill driver to stop charging a battery. The new "smart" chargers get around this by using electronic circuitry to monitor the charging process and minimize heat buildup. Some even refuse to charge a run-down battery until it has cooled. Other than keeping everything cool, chargers need little care. "You replace a few," says Tom, "but that's mostly after something fell on them."

The battery of any cordless tool is actually a collection of batteries, called cells, mixed together and filled with a battery "paste." Each cell is rated at 1.2 volts, join 12 and you have a 12-volt pack. The greater the voltage, the more work the battery can do before it has to be recharged (and the heavier the tool). Battery packs usually last through 500 to 1,000 charging cycles. Rechargeable packs generally cost \$50 to \$80, from battery tips.

Older nickel-cadmium batteries, the new Nikkads can be partially recharged and then recharged without any ill effect. You'll get more life out of them, though, if you recharge it only when the tool starts to feel sluggish. But don't wait until it stops dead—you are damaging the cells if you discharge a battery too deeply.

A battery runs 1 to 2 percent of its charge every day, even if it isn't used. If it's equal to the last in some cases in these battery packs in the tool, contact the manufacturer for recycling instructions or call the Portable Rechargeable Battery Association at 800-325-7725.

A few batteries include a built-in LED resistor that tells you how much charge is left at any given test time.



Drill/Driver Techniques

PHOTOGRAPHS BY KELLER AND KELLER

Simple things, like drilling a hole perfectly straight, can be surprisingly tricky, just as simple tools are often the ones you have to watch out for. "You might be holding a board for a quick hole and end up drilling through your hand on the other side," cautions Tom, so pay attention to where your hands are at all times.

DRILLING HOLES



STRAIGHT DRILLING
Right down the drill to line it up with the workpiece, and start the bit slowly. For greater precision, Tom sometimes holds a small square alongside the bit as a guide. "After that step is to have someone else a yardstick for you—they can tell you to move the drill one way or another."



ANGLE DRILLING
Step 1: Drill is straight until both are set, then remove and reposition the bit to drill through the side of the starter hole. That gives the bit something to bite into, and it won't wander if you're using a spade bit; your starter hole has to be a little deeper.



Step 2: "When you feel your angle, slide with it," Tom says. Don't change, or you'll hand like bit and probably ruin the hole. Keep a good grip on the tool to prevent it from twisting. Push the drill firmly into the hole, then pull it out while the bit is still turning.

DRIVING SCREWS



Tom prefers pistol-grip drill/drivers because he can put his muscle directly in line with the bit. He camers his hand high on the tool and pulls the trigger with his least two fingers. Though it's not always possible, he tries to keep his forearm aligned with the screw to minimize wrist strain and improve control.

To drive a screw with a drill driver, match the speed range to low to increase torque, or turning force, and adjust the clutch so it disengages the motor when the screw is fully set (you'll probably have to fiddle with the clutch setting a few times until you get it just right). Then lean up the bit with the screw—hold a cloth between bit and screw to keep the bit from slipping. Start the screw slowly, increase speed once it's on the way and maintain firm pressure to keep the bit from jumping loose.

First-time screw holes actually make for a stronger connection. The screw shank won't round when driven on its entry, and the threads get a better bite. The pilot hole diameter should be slightly less than the diameter of the screw shank,



If you're settling for a no-name engine, be sure you buy name-brand shoes.



ACDelco Engine

There are brand names you know and trust for just about all of life's necessities. But until now, no nationally known brand name for remanufactured engines.

But now, ACDelco has put its brand on reman. You get a known and trusted name. A full line covering most makes and models. And a limited 24-month, 24,000 mile full parts and labor warranty, honored nationwide.

Now when you get back on the road with a reman engine, you can have confidence you'll be driving all the way. Call 1-800-ACDelco for details.

ACDelco

It's like buying time.

What Light Beyond Compare."

1 1/2 Watts



Create an incomparable ambience with authentic reproduction lighting handcrafted in the same manner and of the same materials as the originals.



Choose from over 250 chandeliers, sconces, porch lights and lamps in Arts & Crafts, Victorian and Nordic styles. Request our FREE 58 page catalogue.

REJUVENATION LAMP & FIXTURE CO., 1100 S.E. Grand Avenue, Portland, Oregon 97214

(503) 241-0900 • Toll free fax: 1-800-LAMP&FIX (1-800-7328)

Shower Update

Installing a low-flow head and an antiscald device

BY WILLIAM MARSANO PHOTOGRAPHS BY DOUGLAS ROSA

W

ith federal water-conservation laws limiting new showerheads to a flow of 2.5 gallons per minute, plumbing expert Richard Trotheway suggests installing a low-flow head as a weekend project. "It sounds like a job you can knock off during commercials on a sports telecast, but there's more to it than screwing the old one off and screwing the new one on," Richard says. "If you're not careful, you'll have more than a weekend project on your hands."

"And," he adds, "you can update your shower by replacing the old faucet—the kind with separate hot and cold valves—with an antiscald or temperature-control valve. Most homeowners don't realize it can be done with out ripping out all their piping."

If Richard had his way, "there'd be an antiscald valve in every shower in the country." The reason is safety. Flushing a toilet, using the sink or stirring the dishwasher can drop cold water from the shower. Without an antiscald valve, you'll get a blast of hot water—up to 140 degrees Fahrenheit, which can cause third-degree burns in a matter of seconds.

Antiscald valves are made for both tub and stall showers, and they're simple to use. Set the desired temperature on the valve, wait a bit for the mechanism to bleed the hot and cold flows, then step in and let her up.

choosing a showerhead

A good guide to low-flow showerheads is the February 1990 Consumer Reports, which rated 29 models. Among regular showerheads, WaterSense Water Plus ES-2-P (50-60) and ES-2-W (50-60) showed one and two, ahead of models priced as high as \$51 and \$45. Economy Conservation ES-901 and Polimer's P500 both only 52) also head the ES-1 head. Among handheld or "personal" models, Triad's TR-10 (20-25) was first, followed by Polimer's P4002 (20-25) and Interiors 81800AW (20-25), which tied, Georrie 500, low water pressure can lower the legal 2.2-gallon flow, slapping your spirits but still also also. (Selection a base with a noticeable flow-restrictor ring.) Two, the risk of scalding increases if a low-flow head is installed at a temperature-control valve is not. That's because the low-flow water heads up behind the head and takes longer to get through.





3

Remove the brush body and, if necessary, unroll the rest of the reticulating air soft supply (see photo). To handle these hot parts, better using a torch. It's best to put a fireproof plumber's cloth behind the work.

[illegible][illegible]

there is an almost endless variety of shower faucets. Grover's minimalist Chorus model (\$650), for tub/shower, offers the simplest installation. No wire cutting here. Just shut off the water supply, remove handles and valve stems and screw the faucet onto the hot and cold valve bodies. Another easy option is Reservoir's Contemporary Solid-Steel

thermostatic shower head (\$14). It's the least expensive of the three (but conversions will put them off too hot water rather than too cooling temperatures). Other fixtures also provide safety and comfort. Soap on a rope is one answer to the danger of soap on the floor; a better one is a well-mounted dispenser for liquid soap, shampoo and lotion.

Put Money[®] in Your Pocket



The one book that easily answers all your questions about personal finance, including how to:

- plan your retirement
- lower your debt
- save for college
- buy a home

Now available in hardcover



The Money Book of Personal Finance



Your Guide to:

Investing in Stocks, Bonds, Mutual Funds • Funding on TV • Saving and Selling Your Home • Booting Your Mortgage • Smart Shopping • Leasing Your Car • Making Your Insurance Decisions • Setting up a Budget • Getting the Best Car Loan • Affording College • Planning for Retirement • Working in Real Estate • Taking Financial Care of Your Parents • Finding the Right Credit Card • Working Children when Money • Making the Most of Your Employer Benefits • Estate Planning • Refinancing Your Mortgage • Choosing a Financial Advisor • And much more!

by Richard Eisenberg

author of 101 Ways to Save

Japanese Saws

For fine joinery, their sharper, thinner blades outperform Western-style saws

BY PAUL ENGSTROM PHOTOGRAPHS BY MARKO LAYRISHA



Paul Dincow was drawn to Buddhism when, on a visit to Japan to study carpentry, he met Shunryu Suzuki, an influential Buddhist teacher. Meditation, says Dincow, is body and mind concentrated on one point. Meditation helps him achieve that single-point focus, even the pieces before an altar in his Oakland workshop. When Dincow tightens the steel-toothed saw against an invisible line from the sawyer's hand to the saw's handle, the hand stretches and contracts with every pull and push. Dincow's Buddhist name, Zengo, translates as a new handle.



Paul Dincow isn't meditating. He's sawing. But one look at this bearded

Buddhist priest and master woodworker—at his intensity, at his alignment of eye, body and mind with the Japanese ryoko saw and length of his Oxford collar that yields to the double-edged blade as hand guides to a final—maybe last—stroke.

His endowing concentration is made that much easier by the ryoko. Like other Japanese saws and in contrast to the Western variety, it cuts on the pull rather than the push stroke. That means the blade is under tension rather than compression, avoiding the use of thin blades for rips, straight cuts.



"You have to be totally focused on that line you're carving, like a laser beam," says Dacot, owner of Jonery Structures in Oakland, California. "The reason has to be right down the line of the cut. You can't be thinking about food, your sex life or something that will send you a straight line."

Why do Japanese saws enjoy such a loyal following in the West, particularly given the convenience of power tools? The tight relationship between the craftsman and his handiwork is one big reason. Jay van Arsdale, the son of a fifth-generation Kentucky blacksmith and owner of another Japanese sawery business in Oakland called The Pull of the Saw, puts it this way: "The more traditional you are, the more distance there is between you and your



LEFT: The *tsurubiki* style pull saw is designed for cutting mortises, grooves in traditional and sliding dovetails. Like the one pictured above, it is especially useful when the craftsman must maneuver in a tight area without damaging adjacent work.

work. What makes traditional Japanese-style woodworking special is the relationship between the tools you use and the kind of work they allow you to do."

Such work often calls for intricate joinery, whether the project is a shop screen, a garden pavilion or a modern-day palace of Japanese design. The great variety of Japanese saws means the seasoned woodworker can use just the right blade for a specific type of cut.

"These tools are so responsive, so perfectly balanced, your personal skill is all that separates you from the wood you work," says van Arsdale. "Japanese tools put the focus back on the master that exists between the craftsman and his craft."

THE SAWS Because a pull stroke puts less stress on the blade, Japanese saws can be made with a harder, though more brittle,



RIGHT: This *ryota* style pull saw has 10 coarse teeth per inch on one edge, 8 rip teeth per inch on the other. Rip teeth increase in size from the heel (near the handle) to the toe of the blade, while all-around teeth are identical.



TOP: With a blade thickness of only 0.040 inch, the blade design is designed for fine cutting of joints and the shoulders of tenons and dovetails. The carbon-steel handle enhances grip.

BOTTOM: The *kanagawa* is a multipurpose universal saw with a fine expansion plastic handle that is comfortable to hold, which eliminates the need for sharpening.

How to Cut a Tenon

A two-handed, whole-body approach to perfect joinery



1 Choose material with a straight grain. Use a business-size pull saw. Japanese blades are thinner than their Western counterparts to a very fine edge. The special iron resists warping the wood, so any warping they are easily removed with a hand plane.



2 Holding the wood with both hands, he grips the 11-inch rafter with both hands to keep the cut vertical. He starts with the small teeth near the heel. Then, sliding in the larger middle teeth, using longer strokes and a steeper angle.



3 The right wrist is cut below. The low height of the Japanese-style workpiece—18 inches, versus the 24 inches of many Western workpieces—enables Dacot to cut his body weight into the blade. He's a righty, so he's doing the work.



4 For the first shoulder cut, Dacot is at a perpendicular angle in the wood. Again, he starts with the small teeth and moves his body weight over the cut. This time, using his left arm to anchor.



5 He finishes with the saw level. Then, he gives the piece a final cut. He stops just outside of the line on the tenon. It's a bit larger than it needs to be. Typically, three rough cuts are to shed with a Japanese chisel for a tight fit of mortise and tenon.



STILL LIVES BY BARNER HANDBOOK

the difference... Western and Eastern

Discoe uses Western saws for crude cuts, preserving his Japanese saws for finer, more sophisticated tasks. Either way, his Japanese training leads him to use his whole body, rather than clamps, to hold work steady. He leaves fast bare to keep wood free of debris.



The push stroke of the Western open set saw is strong and control is one arm-and-palm a lot of stress with. Here Discoe's body weight is in the back of the line of cut.

THE QUALITY OF THE FINISH CUT AND EDGES



The Western saw renders a rough end cut. In this brief cut, however, the cut is from one side of the wood straight through to the opposite side.



The pull stroke of the Jigai saw uses the full advantage of the man's body weight while it slices and slices out. Discoe grips with two hands for more power and greater control.



The Japanese saw leaves a smooth finish. In this brief cut, however, the wood is rotated during the cut so each panel end ends up a grade for beginning the cut on the next side.



Western Japanese

THE WIDTH OF THE CUT

The blades of Japanese saws generally are thinner and have finer teeth than those on their Western counterparts, so they produce a narrower kerf. When Japanese saws are made, the base is made of high-carbon steel and the blade is tempered so it is slightly thinner at the head than at the toe and on the center than at the edges. This discourages binding. The difference in teeth is such that highly scoring, an index finger along the blade of a Western saw should not create a wound. Doing so along the neck of a Japanese saw, however, would be much easier.

I N T E R B A T H

Better design, better quality.

A better product...and choice!

At Interbath our aim is to help you

design a personal care environment

that truly fits your needs.

Available now at your favorite

plumbing store, hardware store

or home center.

For information write or call.



B E T T E R



INTERBATH
INCORPORATED

Worldwide
100 E. 10th Ave. Ste. 100
City of Industry
California 91714
Phone: 800 557-1100
Southern Branch
1000 Taylor Road
Westbrook, Sydney
Australia 1500 114
Phone: 005 005 0010
Mobile Branches: 005 005 0011
Fax: 005 005 0010



INTERBATH PRODUCTS: MORE THAN A HUNDRED WAYS TO TAKE A SHOWER!

© 1994 Interbath, Inc.

Everything.

Let's be honest. When buying or building a new home, there are literally dozens of design choices to consider. Perhaps that's why insulation is so often left to chance.

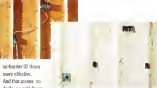
But is it a choice you can afford to take?

The truth is, not all insulation is created equal. The questionable air seal of houses built by some builders can lead to drafts, cold floors and ultimately a growing energy bill. Not to mention the effect it can have on your family's health. Unfortunately, replacement is simply too expensive an option. Achieving optimum comfort means installing right the first time.

Just what is Icynene anyway?

Technically speaking, it's called polyisocyanate. A unique spray-in-place air-sealable foam insulation which expands up to 180 times its original volume, bonding itself to the surrounding building materials. Now, great if that may not sound very exciting, but consider how it can drastically benefit

both your lifestyle and your sense of comfort. Unlike conventional insulation, Icynene fills every crack and every crevice, creating an



air-barrier 30 times more effective. And that means no drafts, no cold floors and no potential condensation damage.

Take a breath of fresh air.

Beyond heating and cooling, Icynene's several helps you achieve maximum indoor air-quality. No pollen. No dust. No outside contaminants. Not even annoying noise pollution.

In fact, Icynene is the only insulation material endorsed by the Environmental Building Program, which is sanctioned by the Lung Association. For allergy and asthma sufferers, this is welcome news.

In short, the Icynene Insulation System provides you with a comfortable, controlled living environment.

We put our money where our mouth is.

Nothing said all that it still comes down to one thing: money. This is where Icynene proves its real value. Because Icynene can typically save you as much as 50% on your heating and cooling costs. It's a savings you'll recognize every day, every month, every year.

We can even back it up with a written guarantee of your estimated heating and cooling costs.

So when it comes to keeping your new home, you can take comfort in knowing it's been done right the first time.

But don't just take our word for it.

The Icynene Insulation System has been the medium of choice for a number of major recreation projects, such as national TV. So, whether you're starting fresh, adding-on or renovating, Icynene is the ideal solution for any insulation problem.

And remember, sooner or later every house will have it. For the name of your local Icynene Contractor, call toll-free today.

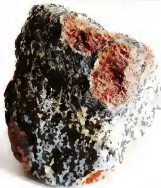


1-800-946-7325

Sandpaper options

Traditional types may not be the best choice

BY JEANNE HUBER PHOTOGRAPHS BY MICHAEL McLAUGHLIN



In nature, garnet is a gorgeous deep red, its crystals clumped against a sparkling background of black hornblende streaked with white feldspar. No wonder the best specimens are set in gold, prized as January's birthstone.

Most gemstone crystals, though, are destined for display in short-term exhibitions of tools, sandpaper. A company after the first specimens, always were stressed, garnet sandpaper still lingers prominently in many hardware store displays. "We reach for it because it's what our fathers used, and because it works. But is garnet the best product for today?"

Not really. Garnet wears down faster than synthetic alternatives such as aluminum oxide and silicon carbide, so it's often used in the most highly regenerative sandpapers sought out by professionals. These sandpapers don't wear down fast because they have different abrasives. The type of backing, the kind of adhesive that holds the abrasive in it and the frequency of use of special coatings are at least as important, so we are doing a lot of 3M's sandpaper research center in St. Paul, Minnesota.

For example, there's a new light green paper that maintains clagging even on water-based finishes and polyurethanes. Its secret is not in abrasive aluminum oxide, removed in 1997 but a scotchlike coating that sloughs off, carrying sanding debris with it. This Old House master carpenter Norm Abene rates about a different 3M aluminum

HINDS OF GARNET

Garnet from the Adirondack Mountains, like these circular clumps, works well in sandpaper because a numerous flange planes make it available easily. About monthly garnet is a sharp than quartz that sometimes breaks before them.

The Icynene Insulation System.

Sooner or later every home will have it

oxide product far has random-order under the known as "macro paper," after the decrease used to measure grain size. Paper designed for the computer industry, macro paper, has a waxy polymer film base, used because the surface particles needed to polish papers would rub onto paper or cloth. Grain size is closely controlled, so virtually all grains are the same size, compared with up to 30 percent "filler" particles in standard sandpaper. The better backside, and more uniform, means are

More on the Beach, by Warren Pless

But macro papers are hard to find. SM tells us Imperial Microbending: Prior to the Internet era, where macro-economists willingly pay more for a product that delivers less, consumers resist even if workers lack experience. Sounds like a perfect product for do-it-yourselfers, right? Curiously, SM doesn't market the paper to home-oriented users because it believes consumers should be more able

A different strategy explains why another superior newspaper—made with a 3M synthetic material called aramid, the same oxide—is marketed to performance. These breakers have one no-compromise trait:

most floor installers to do-it-yourselfers. Tensel sheets were standard paper that were cut out so they can sell lots of it, says Colin Fazel, TMA technical service specialist for floor sanding products.



Gemmat is sorted by size by shaking the crystals through a series of progressively finer screens.



Family runs since 1978, the Barton Moss Corporation hosts games from this 2,100-foot-high mine near North Cass, New York.

Perhaps the most amazing wallpaper, light years from being

part node glued on pages, is a new kind that has the head of sandpaper maul-holding for the positions "and" and "and/or" in the industry—and that's not hype." It also has a model.

[by a person called an anthropologist to make comments attached without the chance of dog gauges. The art of reading, after all, is to make consciously the flower series he said.]

they're not used for the eye to see.



New microreplication technology is made by welding shingles like a shingle pyramid pattern.

How to Read Sandpaper

SAFETY WARNING—Yes, a disc can fly off a random-when-needed or a belt can break.

PRODUCT NUMBER—There's 13888. That allows a user to identify the exact newspaper or call the manufacturer to inquire about its characteristics. These numbers are scattered around to make sure at least one label remains on each roll when 4-foot wide rolls are cut into half, third and sheet sizes.

ABBREVIATION—Copper and other transition elements are usually listed, but synthons are often identified just by traditional names. For example, call the monochloride AlCl_3 . Three Mn and Producers are aluminum oxide, iron(III) oxide, aluminum oxide, aluminum chloride, Tri Mn is aluminum chloride, and Chlorine, Argon, and Argon are organic aluminum oxide.

CAUTIONS—Always handle smoking sheets are backed with paper. "A" weights, the lightest, is for hand smoking with low grates. "C" and "D" weights are for low hand and table power smoking of wood and drywall. "E" and "F" weights are used mostly in drums and bark smokers. Other backing options include (1) airtight containers for hand use or (2) "J" weights, also called press clanks, filter and padlock filters.

OPEN COAT—Some manufacturers DC, this means slivers protrude over 40 to 70 percent of the surface. The other option is closed coat, which means the surface is completely covered. Open coat peels off more quickly but leaves a rougher surface.

NOTE:—100 gms, but this example, means particles passed through a screen with 100 openings per inch (10,000 per square inch) but were trapped by a finer screen one grade up, with 120 openings—A "1" before the number signals a more tightly regulated European standard. A.U. (all screen opened before a grit number issue). In the last one variant, Mexico No. 60 is equivalent to standard 220- to 240-grit mesh.

LOT NUMBER: The PUA would allow the manufacturer to raise the price as the time and confidence under which it was manufactured, would when problems develop. Lots have a serial lot number, in a different set, to identify the value.

the choice of abrasives

来源: 中国统计出版社, 2007。数据由作者整理。

Virtually all abrasives are crystals that break down during use, so sharp, fresh surfaces are repeatedly exposed. Abrasives are rated on two qualities—toughness (how hard it is to get the crystals to break) and hardness (how resistant they are to wearing down). Examples are magnified to show detail.

Natural



GARRETT—Kirkland and lowest growth of all Japanese alternatives. Grayscale flexible under high pressure, no good works well for bond sampling of wood. It's probably the best option for difficult pieces needing ink, where other papers might burn the wood, such as smoking and gluing of bamboo etc. Garrett is available for sale in 1994.



ENERGY—Good for producing more but problematic for what we need because the output tends to be rather than cheap. The renewed interest in nuclear alternatives after Chernobyl, Enefic, a combination of a uranium fuel and a hydrogen moderator, may be a step in the right direction, but it is actually associated with an oil industry.



CROCUS—An herb, native, natural or synthetic, with a small amount of vitamin D. Like many, it is used to clean and polish metal. But it is considerably better than many, as it is used about only very early about halfway in the heat of metal, often used to polish of their metal.

Synthetic



ALUMINUM OXIDE—The most common ceramic material, aluminum oxide is used in many high-temperature alloys. It is made from bauxite ore and is used in many forms. It is used in many forms, including as a refractory material, a ceramic material, and a ceramic material. It is used in many forms, including as a refractory material, a ceramic material, and a ceramic material.



GLASS CARRIAGE—The second-most common accident, it is harder than aluminum oxide and requires a smoother surface on wheels. It's the best choice for sliding furniture on eggheads.

GLUE—Lubricate free with water, never so as to keep the shiny wheels from stopping up where they would slide. Some use a waxed paper surface.



CERAMIC ALUMINUM OXIDE—A new kind of aluminum oxide, one to three times tougher than the standard kind and with a more uniform crystalline structure. Good for power coatings of metal, wood and other materials. Bought and by professional floor suppliers. 5 lb. can with 1 qt. liquid aluminum oxide for each surface.



WARNING—The hardest abrasives, excellent for cleaning and smoothing metal, glass and other hard materials. Potentially an use on only materials such as wood blocks with synthetic abrasives to reduce post drill bit dull about 12 x square inch. Use the rollers should be maintained clipping to sliding slowly to create the smooth finish.

The other parts of sandpaper

[illegible]

Norm's Bench at Work



THE BENCH DOGS

ABOVE: Bench dogs are movable clamps that, paired with vises, secure projects to the bench surface. Which type of dog works best is debated, but experts agree after better building power. And so on.

break like wooden ones, but they may be more expensive. Round dogs permit clamping from any angle, but square ones offer better building power. And so on.

THE ACCESSORIES

ABOVE: There are hundreds of bench accessories, only some of which are really useful. Some woodworkers swear by specialized clamps and jigs. Others get best results with off-the-

shelf clamps. Here, he uses them to secure a long section of a tabletop while cutting slots with a hand plane. The weight of the bench keeps it from slipping across the floor as he slides the cuts.



THE WORKSTATION

ABOVE: The workbench is a tool, but it is also a workstation for the worker. The workbench, in this case, is a critical center. There was a section of rubber matting like the table that kept the legs from slipping on a rubber pad and, here, it under the project that's being made.

THE FACE VISE

RIGHT: Another debate among woodworkers is over what type of vise works best: wood or metal. Wood jaws, often bent on the face you join the sides of the bench, won't leave marks on the project being clamped. Wood corner mountings are insufficient, but metal is superior because it won't bulge, Norm says.



THE BENCH TOP

LEFT: A well-made bench is a beautiful piece of furniture. Some woodworkers spend more time standing and riding the bench top than working on it. A few take time a day to make the bench top a little more like a piece of furniture, but there are a lot of people who, such as Norm, to protect the top during heavy work, use glue-up projects.

THE TAIL VISE

ABOVE: Here, simply put, keep the wood from moving while you work it. Without them, the workbench is little more than a glorified table. Pairs of clamps are typically wedged between bench dogs located on the tail vice, which opens off the end of the bench, and the bench top.



Sturdy, stable, heavy and large

To withstand all the pounding, planing, pushing and pulling that's done on it, a workbench must be strong. The base should be broad, with mallets or hammers to keep the bench from rocking. The post-mortem and more are best—should be right. Most important, the top should be made from a dense, grainy wood, such as maple, beech or birch, to add weight (Norm's bench is a hefty 300 pounds) and keep the bench from shaking and bouncing while you're planing a board or cutting dovetails. A dense wood is

more dimensionally stable than a soft one; the top won't shift around as much with changes in humidity. And a good, thick top can be planed if it's needed.

Whether you plan to buy a bench or build your own, try one on for size first. The bench should suit your working habits and maximize your efficiency. It should be tall enough to prevent backaches and low enough to provide leverage. Select the largest workbench your space can hold. Like a desk at the kitchen table, benches have a way of filling up with stuff quickly.

Four Good Benches

Someday you'll find the time to design and build your own perfect bench. We know that. Until then, here are a few ready-built models and plans to choose from. Incidentally, Norm's German Ulmas is no longer made. But Ulmas has a similar model, a cabinetmaker's bench, available through several catalogs. Suggested retail is \$1,395.



VERITAS
\$700 suggested retail; \$9.99 price; \$45.00 basic home kit
\$209 street price kit (includes top)
This Canadian-built machete, one later in kit or fully assembled, is good enough for woodworkers who make a living off their bench. It features a maple top, a twin-screw nose and a sturdy braided base. Saw weight: 400 grams.



BUILD-IT-YOURSELF WORKBENCH

\$10 plans, \$120 approximately used for parts
 Building your own bench-top guard first project for building woodworkers. This one incorporates several different types of joining including chisels and sockets. You can add more and other accessories as you wish them.



SUGGESTIONS

\$180 suggested retail
Weighing in at 128 pounds, the Swedish built cyclist topped bench at 1 as easily as the professional models. But it's time for the semiserious woodworker: It comes with two vases, plastic cups and plenty of storage space in the base.



BLACK AND DECKER WORKMATE 235

Each leg also works the top of the portable Markemite system by being a vice or clamp to create a work surface. The collapseable steel frame includes a handle that can lock in place, the lower stability and control.

Announcing revolutionary *3D Kitchen*—the easy way to design and visualize your new kitchen, on your PC!



Hundreds of clay and glass
appliances, lights, tables,
chairs, and other objects

See-through windows and glass doors give clients the view.

Mykema Design Guide uses videos and animations to provide expert professional help.



Exclusive WalkAbout™ technology lets you give your designs a "reality check" before you build.

See realistic materials on screen: pine, oak, granite, glass, fire, stainless steel, and more.

Create your dream kitchen layout—then click and “walk” through it in realistic 3D!

News From Books That Work

3D Kitchen is the most powerful kitchen design tool ever developed for homeowners like you. With it, you get a truly phenomenal 3D look at your dream kitchen, right on your PC monitor. No more guessing, ever! And to seal the deal, please and discount, trying to figure out what your new kitchen will really look like. With 3D Kitchen, you'll know!

At Kichell's perfect for trying one option in layout, colors, appliances, and styles. They "take it" through any number of plans. Style and setup plans is a myriad of ways. These "walk through" to see how you'll like living there! Best of all, the process is really easy.

Easy to Design

XO Kitchen gives you fast, powerful design tools and expert advice that make it easy to create kitchen plans that really work. The simple point-and-click interface lets you draw perfectly scaled layouts, show plans, windows, doors, appliances, countertop layout and other objects quickly and easily. No experience necessary!

Easy-to-Furnish

(D) Kidding includes more than 300 volume books: objective rankings, scores, awards, refrigerator calendars, table charts, and more fun stuff to add into your plan. And you're free to customize virtually every element: wallpaper, flooring, accessory materials, and typography. You can even change colors, words, fonts, doc styles, and borders!

Easy to Visualize

What's your plan, a date, just click, and include new WebMail™ technology power to your plan in three dimensions—and let you walk through it. Moving around in your "virtual" kitchen, you'll get a ready-to-use online recipe book that makes life's difference in the world. With 3D Kitchen, you can visit chefs and the crew through the weekend.

Know the Game. Help.

With the imagination of Marlene Design, Guide Panel® makes the right decision a pain free process. Created in consultation with award-winning National Kitchen & Bath certified designers, the Guide provides more than just fundamental concepts. It also gives you the real professional tips and advice that make the difference between to-go and experts when your kitchen is done. From appliance controls and finishes to layout, lighting and more, you'll see your options and understand the trade offs... every way of the road.

Easy to Make the Next Move

If you're planning your next LAN here for now
if you've put drawing above all, make your
next move a 3D—such 3D Artist/Call now
to view your software draped while one special
on customer service is in effect.

Special Introductory Price!
~~\$500.00~~

~~\$79.95~~ **\$49.95**

CALL NOW!

1-800-242-4546, 402

1994-1995

3D Studio is also available in five versions: complete, including COMPAQ 386/486; 386; 386/486; 486; and 486/586. For more information, call 1-800-368-3333.



www.elsevier.com/locate/jbiotec

DISCLAIMER: 486 is a registered IBM PC or compatible Windows® 3.1 or Windows® 2.11 3 MB RAM CD-ROM drive VGA 256 colors (optional) Download

Book The Work is a registered trademark of Book The Work. © Copyright 1995, Book The Work. All rights reserved.